

Urbanization in the Caribbean: Prospects & Management Priorities

Jamaica Case Study

October 1990

**OFFICE OF
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Caribbean: Prospects &
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ABSTRACT

This report on Jamaica is one of five case studies prepared as a part of an overall study of urbanization in the Caribbean region. The final report (Urbanization in the Caribbean: Prospects and Management Priorities, by G. Thomas Kingsley, Jeffrey P. Telgarsky, Ivor Jackson and Milagros Nanita-Kennett) pulls together the findings of all five case studies and region-wide analyses of demographic, economic, and urban trends. It also offers a number of guidelines for policy that are suggested by the analysis.

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PREFACE

This is one of five case studies prepared as a part of an overall study of urbanization in the Caribbean region. The final report (*Urbanization in the Caribbean: Prospects and Management Priorities*, by G. Thomas Kingsley, Jeffrey P. Telgarsky, Ivor Jackson and Milagros Nanita-Kennett) pulls together the findings of all five case studies and region-wide analyses of demographic, economic, and urban trends. It also offers a number of guidelines for policy that are suggested by the analysis.

INTRODUCTION

Jamaica's towns and cities have grown rapidly over the past two decades and there are evidences of serious shortcomings in the capacity of the nation's institutions to manage this growth effectively. One result is environmental degradation. Another, may be a diminishing of the incentives necessary for continued economic growth and job creation.

This report examines these trends and the forces behind them. The first section reviews changes that have been taking place in Jamaica's economy. The second, considers their effects on the island's changing spatial patterns of population and economic activity and, in particular, urbanization. The next three sections look at the record of Government policies and programs established to manage the urban growth process. This is followed by an examination of the outcomes. Finally, we review several promising themes for reinvigorating Jamaica's urban management capacity.

NEW DIRECTIONS IN JAMAICA'S ECONOMY

For Jamaica, like most of the Caribbean, the 1980s was a decade of sharp economic contrasts. The first half saw the effects of an international recession exacerbated by the collapse of the market for the island's primary export: bauxite. By 1985, Jamaica's bauxite/alumina production had dropped to about half of what it had been in 1981 (12 million tons, US\$670 million in gross export earnings). Although a rigorous structural adjustment program had been initiated, few effects were evident by the decade's mid-point. The nation's GDP was then only barely above what it had been in 1980 and GDP per capita had dropped 7.5 percent below its 1980 level (Table 1).

Table 1
Jamaica: 1980's Trends

	1980	1985	1988
Population (000)	2125	2304	2359
Labor Force (000)	944	1050	1082
Employment (000)	680	781	883
Pct. Unemployed	28.0	25.6	18.4
GROSS DOMESTIC PRODUCT (Constant 1980 US\$)			
Total (Mil.)	2656	2664	2871
Index	100.0	100.3	108.1
Per Capita	1245	1151	1205
Index	100.0	92.5	96.8
STRUCTURE OF (%)			
Agriculture	8.3	8.9	8.4
Mining	8.9	5.2	5.4
Manufacturing	15.4	16.3	16.6
Other	67.3	69.6	69.6
Total	100.0	100.0	100.0
PERCENT GDP, SELECTED EXPEND.			
Public Consumption	24.3	23.1	21.8
Gross Fix. Cap. Form.	11.3	12.5	13.0
Exports Goods & NFS	35.5	45.2	50.5
NATIONAL SAVINGS AS %GDP			
Public	-7.8	5.4	5.6
Private	17.3	4.6	11.8
Total	9.5	10.0	17.4

Source: The World Bank

The last half of the decade then brought a recovery that appeared promising on many fronts. Over 1985-1988, GDP grew by 8 percent and per capita GDP also rebounded (although not yet to what it had been in 1980). Unemployment dropped from 26 percent to 18 percent. The recovery was buoyed by more favorable international economic conditions (including marked declines in oil prices) as well as reforms in the internal policy environment. In 1990 there are many signs that Jamaica's economy still has serious problems, but improvement over 1985 conditions had been impressive.

We next summarize some of the major macro-policy initiatives implemented by Jamaica in the 1980s and then review the effects these, along with external conditions, have had in shifting growth paths of the nation's key economic sectors.

The Policy Environment

Jamaica's adjustment program was strengthened after 1985, and most of its policies have been continued by the new government elected in 1989. Key themes and outcomes include: ¹

Production and Export Incentives. Probably the most important element has been realignment of the foreign exchange rate. A major devaluation of the Jamaican dollar in 1983 was followed by a foreign exchange auction system. By the end of 1984, there had been a real effective devaluation of 19 percent over the 1979 rate. Another major devaluation was implemented in early 1990. A number of additional reforms have enhanced the impact. In the early 1980s, over 90 percent of Jamaica's quantitative import restrictions were removed and the import licensing system was largely dismantled. Further reforms in the mid-1980s, much simplified the tariff structure. By 1988, the maximum tariff had been reduced to 60 percent. With all of this, export earnings increased from 35.5 percent of GDP in 1980 to 55.5 in 1988.

Incentives to Save and Invest. Legislation governing bank and non-bank financial intermediation has been revised, and the Central Bank's mandate has been clarified and its supervisory functions strengthened. The reduction of the liquid asset ratio reserve requirement in the banking system, coupled with the requirement to pay interest on a share of those reserves, seems to be reducing financial intermediation costs. Real savings interest rates climbed from -16.5 percent in 1984 to +8 percent in 1987, and Jamaica began to see the return of "flight capital" from abroad. Private national savings grew from 4.6 percent of GDP in 1985 to 11.8 percent in 1988.

Public Fiscal and Investment Policies. A major step here was a comprehensive reform of the personal, corporate, and property tax systems. One result has been a much simpler system with lower marginal rates and a reduction in loopholes and scope for evasion. With improved collection performance, the ratio of taxes to GDP increased from 21.7 percent in FY85/86 to 26.5 percent in FY87/88. On the expenditure side, Central Government outlays were cut from 30.1 percent of GDP in FY84/85 to 26.7 percent in FY87/88. Employment in public administration declined by 27 percent from 1982 to 1988. The management and control of the Public Sector Investment Programme (PSiP) was strengthened, as was the managerial and financial performance of a number of public sector enterprises. Also, an impressive privatization program has resulted in the divestment of J\$800 million in public assets. The overall fiscal deficit declined from minus 14 percent of GDP in FY85/86 to minus 6.4 percent in FY87/88. The initial adjustment program was accompanied by substantial public borrowing from abroad. Jamaica's total external debt grew by 93 percent over the first four years of the program, reaching 135 percent of GDP in 1984, but it grew by only 19 percent over the next four years. Interest on the debt, which had reached 14 percent of GDP in FY85/86, was down to 10 percent in FY87/88.

¹Data in this section are drawn largely from USAID, 1990 and The World Bank, 1989.

Other economic improvements included a reduction in the current account balance of payments deficit (which decreased from -15 percent of GDP to -4 percent in 1987), and a substantial slowing of inflation from 1985 through 1988.

Since 1988. As noted earlier, the new government elected in early 1989 has continued the general directions of this reform program and, although all the data are not in as yet, most observers believe that trends remain positive. However, there have been setbacks. Hurricane Gilbert, in September 1988, was the island's worst natural disaster of the century. Its effects necessitated a sizeable increase in imports in 1989, and this in turn forced restrictive monetary and fiscal responses certain to depress growth in the short term. Inflation has again become significant.

Sectoral Change

These and other changes in the economic environment led to notable shifts in the fortunes of Jamaica's major economic sectors over the decade. The traditional base (agriculture and mining) weakened, and new leaders emerged (tourism and manufacturing).

Tourism was the greatest success story. Tourist arrivals in Jamaica grew on average by 10 percent per annum from 1980 through 1987 when the total reached 1.04 million. The sector enhanced its status as the nation's leading foreign exchange earner that year with receipts totaling US\$600 million. While it is not separately identified in national income accounts, estimates of its contribution to GDP have ranged from 20 to 35 percent. It directly accounted for an estimated 40,000 full-time jobs in 1987—a figure that does not include the indirect employment created in other sectors that provide domestic inputs to tourism. While tourism is becoming more competitive in the Caribbean, and Jamaica's tourist industry has a number of internal problems to be addressed, prospects for further growth are still generally regarded as encouraging.

Manufacturing. Among all sectors, the structural adjustment program has probably had the greatest impact on manufacturing. With high protection for import substitution, the sector's performance had been stagnant through the 1970s. Unreasonably high consumer prices, wasteful use of raw materials, and other inefficiencies were characteristic. Policy reforms of the early 1980s altered incentives dramatically, but there was not much effect until 1985 when export oriented textile/garment production took off. Employment in that subsector grew from 6,000 in 1981 to 22,000 in 1987; its exports jumped from US\$16 million in 1983 to US\$180 million in 1987. As a whole, manufacturing increased from 15.4 percent of GDP in 1982 to 16.4 percent in 1987. The World Bank (1989) regards the sector as "fragile." First, while they have been doing better of late, other major subsectors (e.g., furniture, footwear, food, and agroprocessing) have not yet responded anywhere near as well as garments. Second, garment production itself has run into troubled times over the last two years. Still, the Bank sees the intermediate term outlook as promising, assuming a continuation of the adjustment policies. Incentives have changed fundamentally, and while several subsectors have been slow to restructure themselves in response, there are signs that they are beginning to do so.

Agriculture. Jamaica's agricultural sector has suffered notable declines since the early 1960s when it accounted for 15 to 17 percent GDP. By 1980 its share had dropped to only 8.3 percent. Also troublesome in this period was a marked shift in agricultural production away from exports and toward the domestic market. A number of the policy reforms of the 1980s were designed to address these trends (particularly the deregulation of export marketing, improved farmgate pricing formulae for some export crops, and improvements in credit delivery). The response through the 1980s was mixed at best. On the positive side, bananas production, which had suffered persistent declines since the 1960s, rebounded strongly following the recession (from 12 tons in 1985 to 34 tons in 1987). Coffee production also improved. However, there were more continuing losers than winners. Traditionally, sugar has been Jamaica's largest crop. Its output peaked in 1965 at 506,000 tons. Declines since then have been persistent, and the direction did not change during the post-1985 recovery (1987 production was at 186,000 tons). Others that have continued to decline include cocoa, pimento, legumes, and vegetables. All in all, the sector's response to the adjustment measures of the early 1980s has been regarded as disappointing, and more stringent reforms have been called for.

Mining. With increasing alumina prices in the latter part of the decade, Jamaica's bauxite/alumina production is no longer declining. Exports, in fact, increased by 16 percent from 1985 to 1987. An important contributor was government's reopening of the efficient Clarendon alumina smelter in 1985. Nonetheless, the mining sector had declined from 8.9 percent of GDP in 1980 to 5.2 percent in 1985, and improvements thereafter brought the level up only to 5.4 percent in 1988.

Employment Effects

The trends noted above were generally mirrored in the size and composition of the work force (see Table 2). The annual increase in total employment (which had averaged 15,900 jobs from 1972 to 1982) dropped precipitously to 6,900 over 1982-1985. The subsequent recovery was indeed impressive, netting 40,700 new jobs per year from 1985 to 1988. This was enough to bring the 1982-1988 average to 21,000, one-third higher than the rate of the 1970s.

Measured in dollar terms, the performance of agriculture and mining was disappointing in the 1980s. With improvements in labor productivity, their aggregate contribution to employment declined even more sharply. Together, they generated modest employment increases during the recession years, but suffered an absolute loss thereafter. Over the 1982-1988 period as a whole, employment in these sectors declined on average by 1,600 jobs annually. The only other sector that experienced an absolute loss was public administration, which lost 4,800 jobs per year over that period consistent with the aims of the adjustment program.

All other sectors suffered over the recession but recovered by more than enough to compensate after that. The leader was manufacturing, with an overall 1982-1988 annual employment growth rate of 7.5 percent. Next was services (including most employment generated by tourism along with other categories)

Table 2
Employment Change in Jamaica by Sector, 1972-88

	Total	Agric. Mining	Const. Manufact.	Utilities	Commerce	Pub. Admin.	Other Serv.
Employment ('000s)							
April 1972	598.3	205.5	77.4	63.2	79.7	66.6	105.9
April 1982	757.0	277.9	88.8	65.7	100.2	105.7	118.7
October 1985	781.0	285.8	100.9	69.7	115.7	81.3	127.6
April 1988	882.7	238.0	137.3	92.1	140.7	77.0	167.6
Growth per Year ('000s)							
1972-82	15.9	7.2	1.1	0.3	2.1	3.9	1.3
1982-85	6.9	2.3	3.5	1.1	4.4	-7.0	2.5
1985-88	40.7	-7.1	14.6	9.0	10.0	-1.7	16.0
1982-88	21.0	-1.6	8.1	4.4	6.7	-4.8	8.2
Growth per Year (%)							
1972-82	2.4	3.1	1.4	0.4	2.3	4.7	1.1
1982-85	0.9	0.8	3.7	1.7	4.2	-7.2	2.1
1985-88	5.0	-2.5	13.1	11.8	8.1	-2.2	11.5
1982-88	2.6	-0.6	7.5	5.8	5.8	-5.1	5.9
Percent of Total							
April 1972	100.0	34.3	12.9	10.6	13.3	11.1	17.7
April 1982	100.0	36.7	11.7	8.7	13.2	14.0	15.7
April 1988	100.0	30.4	15.6	10.4	15.9	8.7	19.0

Source: Statistical Institute of Jamaica. "The Labour Force", various years.

which grew by 5.9 percent per year over that period. Jobs in commerce, construction, and utilities also grew at close to that rate. Together, these sectors added an average of 27,400 jobs per year over 1982-1988, 72 percent above the average gain for the whole economy during the 1970s.

THE DOMINANCE OF URBANIZATION IN JAMAICA'S CHANGING SPATIAL PATTERN

Since 1970, there have been notable shifts in the locational pattern of jobs and population in Jamaica. We first review census data on spatial trends in population during the 1970s and then look at employment indicators to assess probable changes in the pattern since then.

Trends in the 1970s

There were some changes in population shares among Jamaica's regions in the 1970s but these pale in comparison with the truly dramatic shifts that occurred

Table 3
Urban Growth in Jamaica, 1970-82

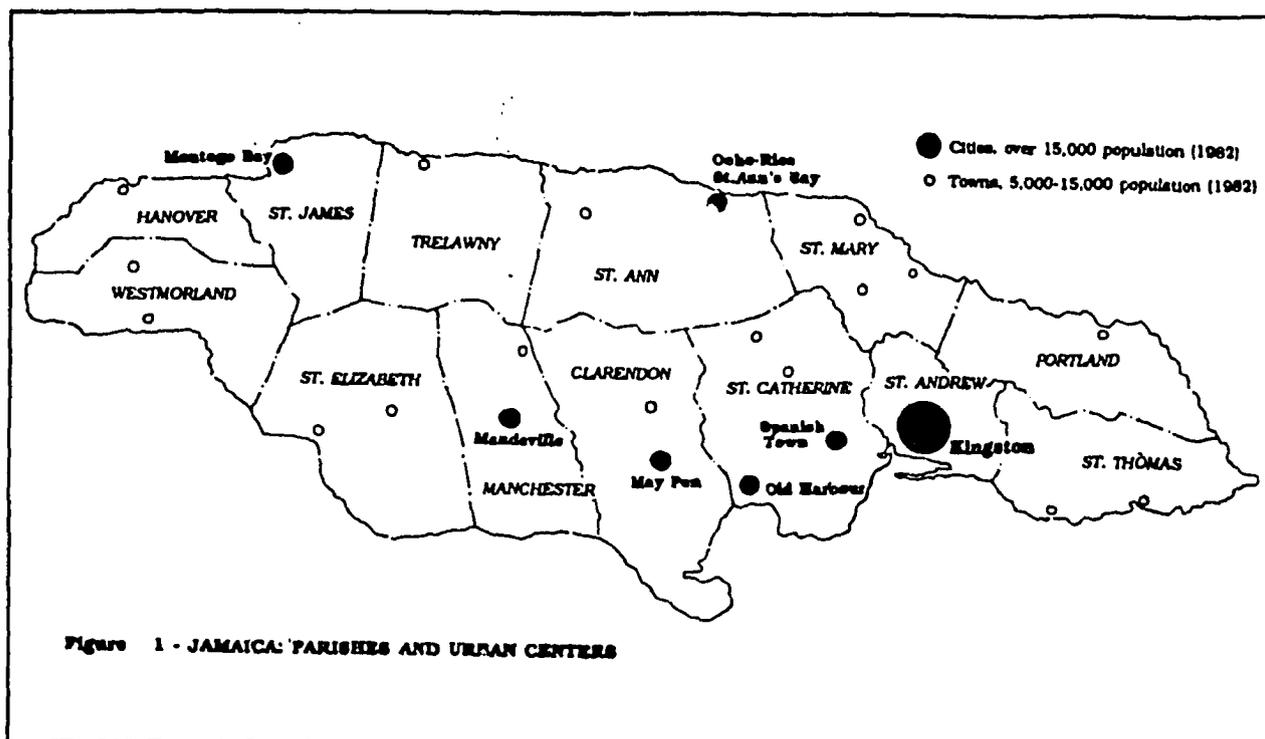
	Population ('000s)		Growth per Year		Percent of	
	1970	1982	Percent	No. ('000s)	'82 Total	Growth
URBAN						
Kingston Metro. Region	517.2	681.6	2.3	13.7	28.0	48.1
Other over 15 thousand						
Montego Bay	43.5	70.3	4.1	2.2	2.4	7.8
Maypen	25.4	41.0	4.1	1.3	1.4	4.5
Mandeville	13.7	34.5	8.0	1.7	0.7	6.1
Old Harbour*	9.5	20.7	6.7	0.9	0.5	3.3
Ocho Rios*	13.0	16.8	2.2	0.3	0.7	1.1
Total	105.1	183.3	4.7	6.5	5.7	22.9
Centers 5-15 thousand	94.2	133.5	2.9	3.3	5.1	11.5
Centers under 5 thousand	32.2	43.3	2.5	0.9	1.7	3.3
Total Urban	748.6	1041.6	2.8	24.4	40.5	85.7
RURAL	1099.8	1148.8	0.4	4.1	59.5	14.3
TOTAL JAMAICA	1848.4	2190.4	1.4	28.5	100.0	100.0

Source: Calculated from 1982 Census data.

*Old Harbour includes Old Harbour and Old Harbour Bay, Ocho Rios includes Ocho Rios and St. Ann's Bay.

through urbanization in virtually all regions. Since employment in economic activities that normally locate in the countryside (agriculture and mining) increased their share of total employment (from 34 percent in 1970 to 37 percent in 1982) one might have expected a different outcome. But this makes the change that did occur all that much more remarkable. *Jamaica's urban areas, which had accounted for only 40 percent of total population in 1970, accounted for 86 percent of the island's total 1970-1982 population growth.* The urban population had grown at a rate of 2.8 percent per annum, compared to just 0.4 percent for the rural population (see Table 3). As to the distribution among cities. (See Figure 1)

1. *The Kingston Metropolitan Region* (defined here to include Spanish Town and Portmore as well as the urban portions of Kingston and St. Andrew Parishes) *still dominated the pattern.* Its 681,600 residents represented two-thirds of Jamaica's 1982 urban dwellers, but its 1972-1982 annual growth rate (2.3 percent) was well below the urban average.



2. While still much smaller in the aggregate, *several secondary cities grew much more rapidly* than the metropolis. The five secondary centers with populations over 15,000, grew on average by 5.3 percent from 1970 to 1982 (more than twice metropolitan Kingston's rate). While they accounted for only 5.7 percent of Jamaica's total population in 1982, they absorbed 22.8 percent of its 1970-1982 growth.

3. The Old Harbour area should probably be thought of as an outlying suburb of metropolitan Kingston, but the other four centers have independent economic bases. Their stories in the 1970s varied. Montego Bay had the strongest record overall, *gaining substantially* from tourism, but also expanding its manufacturing sector. Growth in Ocho-Rios-St. Ann's Bay depended almost exclusively on tourism. The two centers in the southern plains (Maypen and Mandeville) grew due to the expansion of agricultural service functions, some diversification into manufacturing and, in Mandeville's case, service to the expanding bauxite industry.

4. Jamaica had 32 other *smaller towns* in 1982. Together they accounted for only 6.8 percent of the nation's population, and their growth in the 1970s *did not have a notable impact on national spatial patterns*. On average, they grew more rapidly than rural areas, but much slower than the key secondary centers noted above.

Table 4
Employment Change in Jamaica by Location, 1972-88

	Total	KSAC, St. Cat.	St. James	St. Ann St. Mary	Clarendon	Manchester	Other Parish
Employment ('000s)							
April 1972	598.3	263.3	32.3	64.9	41.7	33.3	162.8
April 1982	757.0	312.9	45.5	80.5	60.9	65.0	192.2
October 1985	781.0	307.1	53.4	85.6	66.3	64.6	204.0
April 1988	882.7	386.4	59.2	93.0	69.0	63.6	211.5
Growth per Year ('000s)							
1972-82	15.9	5.0	1.3	1.6	1.9	3.2	2.9
1982-85	6.9	-1.7	2.3	1.5	1.5	-0.1	3.4
1985-88	40.7	31.7	2.3	3.0	1.1	-0.4	3.0
1982-88	21.0	12.3	2.3	2.1	1.4	-0.2	3.2
Growth per Year (%)							
1972-82	2.4	1.7	3.5	2.2	3.9	6.9	1.7
1982-85	0.9	-0.5	4.7	1.8	2.5	-0.2	1.7
1985-88	5.0	9.6	4.2	3.4	1.6	-0.6	1.5
1982-88	2.6	3.6	4.5	2.4	2.1	-0.4	1.6
Percent of Total							
April 1972	100.0	44.0	5.4	10.8	7.0	5.6	27.2
April 1982	100.0	41.3	6.0	10.6	8.0	8.6	25.4
April 1988	100.0	43.8	6.7	10.5	7.8	7.2	24.0
Unemployed ('000s)							
April 1972	104.5	80.9	13.6	17.7	23.3	10.3	38.7
April 1982	280.7	125.1	19.3	35.8	27.5	9.3	63.7
October 1985	268.8	143.9	16.2	24.5	26.2	10.0	48.0
April 1988	199.0	81.8	12.7	19.5	24.5	9.7	50.8
Unempl. Rate (%)							
April 1972	23.6	23.5	29.6	21.4	35.8	23.6	19.2
April 1982	27.1	28.6	29.8	30.8	31.1	12.5	24.9
October 1985	25.6	31.9	23.3	22.3	28.3	13.4	19.0
April 1988	18.4	17.5	17.7	17.3	26.2	13.2	19.4

Source: Statistical Institute of Jamaica, "The Labour Force", various years. (KSAC=Kingston and St. Andrew)

Reinforcement During the 1980s

Comparable measures of spatial change during the 1980s will not be available until the next census is published. It is most probable, however, that urbanization was even more dominant than it was in the preceding decade. Population tends to follow employment opportunities and, as we have seen, the growth of jobs in typically urban based sectors (manufacturing, tourism, and other services) was much stronger in the 1980s, and sectors that generate rural job opportunities (for the most part agriculture and mining) actually declined.

Employment data on a parish basis also give some strong clues about comparative growth rates among urban centers (Table 4):

1. St. James parish (Montego Bay and surrounds) registered the island's most rapid employment growth rate from 1982 to 1988 (4.5 percent per annum).

2. Employment in Kingston, St. Andrew, and St. Catherine parishes (largely the Kingston Metropolitan Region) suffered absolute losses during the recession of the early 1980's but bounced back strongly thereafter, capturing about three quarters of the nation's total net increase in jobs from 1985 to 1988. This area's overall 1982-1988 employment growth rate was 3.6 percent.

3. In St. Ann and St. Mary (Ocho Rios and other north coast tourist sites), employment also grew fairly rapidly (2.4 percent) but performance on the southern plains deteriorated. Clarendon (capital at May Pen) registered a 1982-1988 employment growth rate of 2.1 percent (compared with 3.9 percent over 1972-1982). Manchester (capital at Mandeville), which had been Jamaica's leading gainer during the 1970s, actually lost employment over 1982-1988 (minus 0.4 percent annually) no doubt largely due to the troubles of the bauxite industry.

4. All other parishes (those without major urban centers) registered employment growth averaging 1.6 percent annually over 1982-1988, considerably below the 2.6 percent national average.

All in all, then, it appears that much of Jamaica's economic dynamism in the 1980s was focused in metropolitan Kingston and in the island's major tourist centers.

The Future Pattern

U.N. projections hold that virtually all of Jamaica's population growth from 1990 to 2020 will be urban. The Government of Jamaica's most recent forecast (presented in its National Shelter Strategies 1987) is more conservative, but still calls for urban areas to absorb 88 percent of the island's 1982-2010 growth. In this forecast, metropolitan Kingston's population grows from 681,600 to 1.08 million over this period. The populations of all other urban areas together increase from 365,000 to 712,000—just about doubling over 28 years.

JAMAICA'S URBAN GROWTH POLICIES AND MANAGEMENT CAPACITY

Rapid urbanization in itself should not be seen as troubling. As noted in Chapter 3, it is a natural accompaniment of economic growth. Indeed, for Jamaica, it is difficult to imagine satisfying increases in per capita GDP without it. Nonetheless, urbanization does not guarantee the achievement of broader social or economic objectives. Without adequate management, urban development can result in serious environmental degradation and it can, in fact, constrain the nation's economic potential. There are indications that both of these negative outcomes are occurring at present in Jamaica.

Jamaica does not have an explicit urban policy. The Government did prepare a national plan for the physical aspects of urban development in 1979, however, that plan was presented at a very general level. It did not offer quantitative targets for growth in different locations, schedule supportive capital improvement programs, or detail other operational mechanisms for guiding urban development. The Government's *de facto* stance regarding urbanization must be observed in its behavior on two levels. (1) its establishment of macro-economic policies that indirectly influence spatial patterns; and (2) the behaviour of its agencies that either make capital investments themselves or guide and control actions of the private sector in doing so.

At the macro-economic level, it would be fair to characterize Jamaica's policies as "permissive" regarding urbanization. The adjustment programs of the 1980s aimed at improving incentives for growth in all sectors regardless of location. There are no policies directly intended either to favor or discourage urban growth. Many would argue that this is the most appropriate position for a national government to take at this level (see, for example, Abt Associates, 1988, and The World Bank, 1989).

The problems seem to be occurring at the second level: in the more direct programs that attempt to guide and control development. We review these below in two categories: (1) the Government's management of land development; and (2) its provision of infrastructure and related urban services.

MANAGING THE DEVELOPMENT OF URBAN LAND

Land Planning

Responsibility for planning urban areas in Jamaica rests with the Government's Town Planning Department (TPD). TPD prepared a number of plans for urban areas in the 1960s and 1970s, but over the past decade the Department has been beset by management and staffing problems that prevented it from fulfilling this mission (see Kingsley et al, 1987 and 1989). TPD's last completed urban plan was published in 1982.

Is this really a problem? The development literature is replete with indications that traditional zoning-oriented master plans have had much positive influence on urban patterns (see, for example, Courtney, 1978, and UNCHS, 1990).

The difficulty in Jamaica seems to be not the lack of plans of that type as such, but the lack of any regular spatial coordination of public development programs. There is no mechanism for interministerial reviews of how individual cities and towns might grow to serve as a basis for the spatial coordination of their activities and to minimize land-use conflicts with respect to agriculture and environmentally sensitive areas.

The Regulatory Environment

TPD is responsible for administering Jamaica's land development regulations, including Development Orders (zoning regulations for major urban centers, most of which were last updated in the 1960s) and a 1982 *Manual for Development* that provides standards for subdivisions. Cost analysis by the Construction Resource and Development Centre (1987) showed that many of the standards in these regulations are economically unrealistic. A modest house that met the standards of the Kingston Development Order, for example, would have been affordable to only the top 15 percent of the income distribution. Coiner (1987) found that TPD processing of subdivision applications was slow and cumbersome, lacking clear guidelines and requiring redundant referrals to many outside agencies.

Obtaining legal approval to subdivide or develop land is thus a costly process in Jamaica. Also, weak sanctions and inadequate institutional capacity at TPD and other agencies imply negligible enforcement. Proposals for larger developments normally are submitted for formal approvals, but many smaller developments (including some middle- and upper-income homes) proceed avoiding the regulatory process altogether. It has been estimated that at least half of all housing units built in Jamaica during the 1970s went ahead without government approval (Kingsley and Wines, 1987). Squatter settlements continue to proliferate in all of Jamaica's larger urban centers.

One result of high standards and inadequate coordination is excessive use of land as urban areas grow. Metropolitan Kingston had 48.2 acres of land developed for urban use per 1,000 inhabitants in 1982. This is even higher than the average for large U.S. cities (47.2 acres cited in a mid-1960s study) and much higher than the average for cities in developing nations (20.5) and for many cities in middle-income countries, for example, 16.5 in Buenos Aires, (see Kingsley and McLean, 1987).

Estimates adapted from Jamaica's National Shelter Strategy indicate that the nations' urban population will grow from 1.05 million in 1982 to about 1.80 million in 2010—an increase of 0.75 million people. In accommodating this growth, there will obviously be much more encroachment in prime agricultural lands and environmentally sensitive areas if present land use ratios are maintained than if they could be reduced significantly. Equally dramatic would be the effect on costs. Lower per capita urban land use means less road area and shorter pipe lengths for infrastructure systems, as well as lower site development costs in the aggregate.

One further regulatory problem is the difficult process of acquiring title to land for new development. The lack of an automated cadastral system and a host

of legal and administrative complexities imply that it can take 2 to 3 years for a business or household to acquire clear title to a parcel of land it wants to develop.

Direct Development by Government

Government agencies do develop land for urban use in Jamaica, but they have not been a major force compared with developmental activity of both the formal and informal components of the private sector. And under current policies, the role of government in this regard appears to be diminishing.

The most important agency involved has been a parastatal, the Urban Development Corporation (UDC). At one time, UDC was the major initiator of development for tourism in Jamaica. In 1980, one of its subsidiaries owned a controlling interest in 17 of the islands hotels (60 percent of total hotel capacity). Its land acquisition and development activities largely shaped the growth of Ocho Rios, and it still has plans for major new developments in Montego and Negril. Since 1985, it has also been responsible for the development of 100,000 square feet of factory space in Jamaica's free zones.

Government policy in the 1980s, however, pushed UDC to divest many of its tourism holdings to the private sector and its future plans in that sector assume a less ambitious direct role. Its factory production program has been terminated (vacancy rates are high in the space it has produced to date). UDC land holdings remain substantial in and around Kingston and other urban centers. The agency does not seem to have clear plans either to develop those lands itself or to make them available for private development in the short term. But resource constraints and other factors suggest that divestment is likely to be the dominant strategy over the long term. Clearly, UDC is not planning any major expansion of its land inventory.

Traditionally, the Government of Jamaica (GOJ) has also assumed substantial responsibility for the development of low-income housing in urban areas. The primary actor has been the Ministry of Construction (Housing), but the UDC and a number of other agencies have also been involved. From 1972 to 1982, however, total public sector housing production averaged 3,500 units per year—only 22 percent of total housing production over the period. From 1982 to 1985, public sector production dropped further to an annual average of 2,100 units (about 14 percent of total production). Because of a host of problems (including high per unit costs and the discovery that most of the beneficiaries of government housing programs had been middle-income families rather than the poor) the GOJ adopted a new strategy in 1987. The strategy (since endorsed by the new government elected in 1989) called for the public sector to withdraw from its role as a direct producer of housing. It states that government should instead concentrate on facilitating housing provision efforts by the private sector (informal as well as formal).

Table 5
Infrastructure in Jamaica's Urban Areas, 1982

	Total House holds ('000s)	Percent Without		
		Piped Water	WC Link. to Sewer	Electricity
Kingston Metro.Region	184.5	9.0	57.7	17.9
Other over 15 thousand				
Montego Bay	17.6	20.2	81.5	26.9
Maypen	9.5	29.9	89.9	46.4
Mandeville	7.7	55.5	90.2	28.8
Old Harbour*	4.7	10.5	89.7	47.3
Ocho Rios*	4.0	8.2	78.6	23.4
Total	43.6	26.4	85.5	33.4
Centers 5-15 thousand	32.9	27.9	88.3	46.9
Centers under 5 thousand	10.9	41.9	88.1	54.7
Total Urban	271.9	15.4	67.0	25.3
No. Households Served	-	230.1	89.6	203.0

Source: Calculated from 1982 Census Data.

* Old Harbour includes Old Harbour and Old Harbour Bay.

Ocho Rios includes Ocho Rios and St. Ann's Bay.

INFRASTRUCTURE AND URBAN SERVICES

Considering Jamaica's stage in development, the quality of its infrastructure networks has been regarded as high by international standards. In 1982, only 15 percent of its urban households did not have access to piped water and 25 percent did not have electricity in their homes (Table 5). There is a serious deficit in sanitation—two-thirds of 1982 urban households did not have connections to piped sewerage systems—but even this is a higher level of provision than experienced in most of the developing world.

There are indications, however, that Jamaica is now falling behind in urban services. Complaints about undermaintainence of existing systems are numerous, and infrastructure agencies have had a variety of problems in addressing the substantial growth of informal settlements in urban areas.

The Public Sector Improvement Programme Overall

Before examining performance in individual sectors, it should be helpful to review changes in the size and composition of Jamaica's overall capital investment budget—the Public Sector Improvement Programme (PSIP). The most important factor to keep in mind is that since 1980 the size of the PSIP had to be held in check if serious macro-economic imbalances were to be avoided. The government has been diligent in this regard. Table 6 shows that the total PSIP has been kept fairly level over this period (in the range of 10 to 13 percent of GDP—the last two columns on the table are actually plans of the Seaga government, but the new government has not changed them notably).

Three points are worth noting about shifts in the composition of the program. First, government investment in the directly productive sectors is declining. Within that component, shares for agriculture, mining, and manufacturing have dropped more sharply while that for tourism has increased. Second, the economic infrastructure component (which includes urban services) expanded during the mid-1980s. These changes are a clear demonstration of the prevalent strategy: government handing over more responsibility for direct economic activity to the private sector, but increasing its own indirect facilitating role. Within the economic infrastructure component, the share for transportation and communication shows an increasing trend, water and power have held their own, and the share for other activities has declined.

The third shift is a marked increase in emphasis on social infrastructure in plans for the late 1980s and early 1990s. This entails substantial increases for education and health, but a drop in direct investment in housing. A continuation of this new emphasis, along with the macro-economic constraint on the overall size of the PSIP, implies that urban services cannot anticipate much room for growth in their allocations in the near term.

Water Supply

Water supply in Jamaica is primarily the responsibility of the National Water Commission (NWC) although, because of perceived weaknesses at NWC, major system development tasks were assigned to a new public corporation, Caribbean Engineering Consolidated Ltd., in the 1980s. The systems have expanded. The Planning Institute of Jamaica (PIOJ, 1990) reports that from 1985/86 to 1989/90, total production increased by 41 percent (reaching 57.9 billion imperial gallons at the end of the period), and the total number of connections increased by 24 percent (reaching 249,600). Systems losses, due to leakage and other causes, remained high at 26.4 percent of total production in 1989/90, but this represented a considerable improvement over the 32.0 percent recorded over the previous year.

Still, there are recognized deficiencies in several areas. Nationwide, 85 percent of those interviewed in a 1986 Carl Stone survey, reported inadequacies in water access ranging from complete lack of water to periodic shortages. Deficits have been particularly serious in rapidly growing tourist areas such as Montego Bay, Ocho Rios (which faced a 50 percent deficit in relation to demand in 1988)

Table 6
Jamaica's Public Sector Improvement Program
as a Percent of GDP, 1980/81 through 1990/91

	Actual				Planned	
	80/81	82/83	84/85	86/87	88/89	90/91
Direct. Productive						
Agriculture	1.89	2.63	1.14	2.08	1.18	0.61
Mining	0.01	0.01	0.03	0.04	0.02	0.01
Manufacturing	0.18	0.45	1.05	0.65	0.36	0.17
Tourism	0.17	0.68	0.62	1.20	0.91	1.17
Subtotal	2.25	3.80	2.83	3.95	2.46	1.96
Economic Infrastr.						
Power/Energy	1.13	0.81	3.25	1.21	1.06	1.17
Transp./Comm.	2.85	2.34	2.90	2.82	4.10	3.16
Water/Other Util.	0.73	0.56	0.60	0.54	0.79	0.88
Other Economic	0.98	1.93	0.48	0.29	0.11	0.08
Subtotal	5.69	5.64	7.22	4.86	6.06	5.29
Social Infrastr.						
Education	0.20	0.35	0.69	0.62	1.10	0.78
Health	0.23	0.35	0.17	0.30	1.14	0.81
Housing	0.73	1.14	0.16	0.12	0.08	0.05
Other Social	0.47	0.97	0.41	0.39	0.91	0.65
Subtotal	1.62	2.80	1.42	1.42	3.24	2.28
Administration	0.49	0.80	1.46	1.50	0.71	0.47
Proj. Not Identified	0.00	0.00	0.00	0.00	0.00	1.53
Total	10.05	13.05	12.93	11.73	12.47	11.52
Nominal J\$ (Mil.)						
Total PSIP	488	769.3	1211.6	1684.2	2125.3	2300.0
GDP	4863	5895.4	9369.6	14354.5	17043.1	19963.6

Source: Calculated from data in The World Bank, 1985 and 1987

and Negril (where in some cases water must be carried three miles from the nearest standpipe and one standpipe may serve as many as 2,000 persons).

As would be expected, water access problems are most serious for the poor. Through the late 1980s, NWC followed a strict cost recovery policy. Developers of new residential subdivisions had to cover the costs of off-site systems expansions (trunk lines, pumping facilities, etc.), as well as on-site reticulation and connections. While this was normally feasible for higher-income settlements, it was an economic impossibility in low-income areas. Also on cost-recovery grounds, NWC had policies against: (1) providing community standpipes in informal settlements; and (2) providing house connections for households that did not possess registered title to their properties (although many low- and moderate-income families who have legal rights of occupancy do not yet have certificates of registration). As a part of a USAID shelter sector program initiated in 1988, however, NWC has modified its general policy concerning service to informal settlements and is experimenting with a number of methods to attain reasonable recovery of costs in extending water to these areas.

Sanitation

As noted, Jamaica's deficit with regard to urban sanitation is more severe. NWC is also responsible for the development and operation of the nation's sewerage systems. It expanded the total number of connections to piped systems (residential and non-residential) by 1,900 per year on average from 1985/86 through 1989/90 (reaching a total of 45,700 at the end of the period (PIOJ, 1990). With the number of household growing by approximately 15,500 annually, however, the deficit is clearly expanding at a rapid pace.

The expansion of aggregate sewerage treatment capacity (from 18.9 million imperial gallons per day in 1986/87 to 24.8 million in 1989/90) has also been modest in relation to the need and here, operating and maintenance problems pose a difficult challenge. Silva (1989) reports that only 38 of Jamaica's 97 treatment facilities are considered to be operating properly (18 of these are independently operated plants serving hotels). NWC states that its Montego Bay plant, which has a 0.75 million imperial gallon per day capacity, is now faced with daily flows of 2.0 million. Similar problems exist in Kingston.

Solid Waste Disposal

The public collection of solid wastes in Jamaica's cities was notoriously inadequate, until the system was reformed in the mid-1980s. Street cleaning and waste collection in major urban areas is now performed by private contractors working under the management authority of Metropolitan Parks and Markets (a subsidiary of UDC). This approach has made a notable difference in service efficiency and effectiveness, although there are still problems in waste disposal practices that need to be addressed, particularly with respect to environmental hazards created by dumpsites in wetland areas.

Electric Power

The Jamaica Public Services Co. (JPS) expanded electrical production island-wide from 1.52 billion kwh in 1986 to 1.87 billion in 1989. Of the latter total, 1.47 billion kwh were sold to its customers (31 percent to residences and the rest to businesses and public agencies). The number of JPS residential customers grew by an average of 8,700 per year from 1985 through 1989, substantially above the annual increment for sewerage service but still well below the rate of household formation. Also, consumption per meter has increased for all categories: from 1988 to 1989, by 12 percent for residences and by 8.5 to 10.6 percent for commercial and industrial establishments. The average charge for residential service has been raised substantially of late (from J\$0.63 per wh in 1986 to J\$0.76 per wh in 1989), but the price for commercial and industrial customers has remained relatively stable over this period (PIOJ, 1990).

Overall, JPS' record over the past few years has been impressive, particularly considering the damage to the system wrought by hurricane Gilbert in September 1988. Nonetheless, difficulties remain. Periodic breakdowns of its larger generators, for example, caused widespread power outages in 1989. Unreliable service is clearly a constraint on business expansion as well as an inconvenience to the population. Also, service is not being extended effectively to informal settlements as yet (many households in such settlements pirate electricity from nearby distribution lines, creating potentially hazardous conditions in many areas).

ENVIRONMENTAL CONSEQUENCES

A recent comprehensive study (Government of Jamaica and Ralph M. Field Associates) indicates that Jamaica's environmental problems are becoming more widespread and more severe. The most serious is probably due to the expansion of subsistence farming on rural hillsides. Small farmers occupy lands where soil conditions are much too fragile to sustain adequate yields and their "slash and burn" approach is reportedly diminishing the island's natural forests at a rate of 3 percent per year. It is estimated that 80 million tons of topsoil is being lost annually due to these practices. With the loss of water retention in the hill areas, considerable siltation and debris flows downstream. This is now damaging crop production in the fertile coastal plain and, later, smothering marine life in the river deltas. Flash flood hazards are enhanced and, in the dry season, average surface water flows are obviously reduced.

However, rapid urbanization is also an important issue in this regard. The major environmental problems caused by inadequate management of urban growth are predominantly related to the land and infrastructure difficulties discussed above.

As to land, the core problem is that new land is not being opened up fast enough to accommodate urban expansion in areas that are best suited for it. This puts the pressure on environmentally sensitive areas (e.g., wetlands, hillsides) and, under that pressure, public control systems so far appear incapable of preventing their development. A further problem is beach erosion caused by the removal of

beach sand for urban construction projects (this has been a particular problem on the north coast given the recent expansion of tourist facilities).

As to infrastructure, the lack of adequate sanitation has the most serious environmental consequences. Two outcomes are relevant. The first is the pollution of groundwater. Given the lack of piped sewerage, most households must provide some means of disposal on their own properties. According to Silva (1989), a 1987 PAHO study found that 47 percent of all Jamaican households rely on pit latrines. Others without access to piped systems have provided septic tanks. While less attractive aesthetically, dry pit latrines do not pose as serious a risk as septic tanks given conditions that exist in much of Jamaica (i.e., high groundwater levels, weathered limestone, shallow bedrock). The nitrogen effluent concentration ranges from 41 to 49 mg/l, whereas the safe drinking water threshold for nitrates is 10 mg./l. Growing contamination has been detected in a number of wells.

The second problem is inadequate treatment of sewerage before it is dumped into the sea. Effluent from Kingston plants has already drastically reduced dissolved oxygen and destroyed virtually all benthic life in its harbour, and the Montego Bay situation noted earlier is clear threat to coral reefs and other life forms in the Bay.

Other pollution problems arising from urban growth are not as serious at present, but there is a need for more careful monitoring and corrective actions in some cases. Advance planning for solid waste disposal is a priority to provide adequate disposal sites that are not environmentally threatening. Avoiding wetland sites is particularly important in this regard. Air pollution is a problem in some areas due to a concentration of industrial plants, power stations, and garbage burning facilities. Addressing these problems with future urban growth will demand more effective land use planning, as well as improved anti-pollution technology in the facilities themselves.

POLICY OPPORTUNITIES

As noted earlier, the problems enumerated above are not caused by urbanization but, rather, by inadequate management of urbanization. Still, they can lead to serious constraints on economic betterment, as well as reductions in the quality of life on many fronts if left unchecked while rapid urban growth continues. Jamaica has by no means done all it can to address them, but in almost every area it has taken some impressive steps toward creative solutions. These are reviewed below in three areas: (1) energizing local development planning; (2) addressing land constraints; and (3) approaches to infrastructure development.

Energizing Local Development Planning

A Community-Led Planning Effort. No government agency in Jamaica is presently equipped to prepare useful development plans for the island's major urban areas. The government is now supporting an experiment with an alternative approach in Montego Bay that appears promising. In this approach, the local Chamber of Commerce will sponsor the planning process (with financial support

from USAID). The Chamber will retain consultants to prepare technical studies and analyze alternatives, but proposals will be evaluated by a broad based group of community leaders. Government officials will be regularly involved and provide technical support. The process aims to produce a development plan that is quite unlike many of the zoning-oriented land use plans to the past. It is to give emphasis to the programming of action projects to enhance economic growth and environmental improvement as well as physical development per se. Hard-nosed cost and financial analysis is also to be built into the planning process.

One of the most appealing characteristics of this approach is that it mobilizes the energies of the people who have the most at stake in the outcomes. This is particularly important at a time when government agencies face capacity constraints, but it would have substantial value even if government was in a stronger position. A plan developed in this way is much more likely to gain needed political acceptance in the community than any plan, no matter how high its technical standards, prepared by government planners in Kingston.

The Inner Kingston Restoration Process. The Montego Bay approach is a part of a broadened use of Non-Governmental Organizations (NGOs) and public private partnerships in Jamaica to achieve public policy objectives in the development process. It builds off of the success of the Inner Kingston Development Project, which is based on similar principles. Job generation is the primary objective of this project. Its concept was derived from analysis of local market conditions indicating that: (1) the impact of a recent devaluation on wages should have created more new employment than seemed to be emerging; (2) the lack of sufficient factory space appeared to be a key constraint to the expansion of small local firms; (3) the deterioration of downtown Kingston had left behind many vacant structures that could be rehabilitated to provide such space cheaply; and (4) downtown real estate market conditions offered signs that some key improvements could yield renewed private interest in investment.

The project is being operated by an NGO (the Kingston Restoration Company-KRC), which is using AID funds as seed money, directly rehabilitating some structures and taking a number of other actions to stimulate a wave of private reinvestment in response. KRC's Board of Directors is composed of major business leaders in the area along with a representative of UDC. Since 1987, KRC efforts have resulted in the rehabilitation of 150,000 square feet of floor space for small and moderate sized manufacturers, facade restorations on numerous downtown properties, tree planting and other improvements to downtown's major shopping street, and job training and other activities to ameliorate conditions in the surrounding residential community (Peterson, 1987, and Dubinsky, 1987).

Addressing Land Constraints

Coordinated Planning for Urban Fringe Development. A number of changes appear to be needed in Jamaica to create a smoothly functioning land delivery system. The first was mentioned earlier—the establishment of regular coordinated decision making by infrastructure agencies and other key government policy bodies as to which lands on the fringes of urban areas should be expanded for development. Making such decisions sensibly requires considerable technical

analysis, as well as the balancing of interests in the political process. The best way to meet this need at present may be the sort of community-based planning process (with government involvement) envisioned for Montego Bay, as discussed above.

An effectively functioning private land market is the next basic requirement, with appropriate incentives to guide private development in a manner that is both efficient and environmentally sensitive. A priority here is to reform the regulatory environment. A Town Planning Review Committee (set up by Prime Minister Seaga in 1986 and continued under the present government) sponsored a number of studies of the relevant issues and developed a series of recommendations that, if adopted, should offer considerable progress on this front. Recommendations cover: (1) substantially revising current standards that contribute to making development unaffordable; (2) a number of actions to expedite the processing of applications, including a drastic cut-back of redundant reviews by agencies outside of TPD and more aggressive management use of the computer-based applications processing system implemented as a part of the project; and (3) a series of actions to strengthen the internal structure and management of TPD along with a scheme for increasing the fees paid by developers for applications processing (now ridiculously low) and using the proceeds to cover all or a share of TPD operating costs) (Kingsley and Wines, 1987; Kingsley, Olsen, and Telgarsky, 1989).

This process, however, has not tackled the issue of enforcement capacity and related penalties. Also it did not entail a full review of standards and requirements from the environmental perspective. (Additional insights on these topics are found in George and Wolfe, eds., 1989, and National Conservation Strategy Secretariat, 1990.) It seems likely that analyses in these areas could lead to broader change in the regulatory framework. Creating standards for key environmental concerns that are truly enforceable may require much more flexibility with regard to standards for other topics that are less critical.

A well-functioning private land market also requires sure and speedy processing of land title transactions and, as noted, this also remains a problem in Jamaica. A Government project (with IDB and UNDP support) has begun to plan improvements in this area, including a time-phased approach for developing an adequate computer based cadastre. (Government of Jamaica and UNDP, 1989). Difficult legal as well as administrative changes may be required, however, before a truly efficient system can be completed.

Effective Public Land Delivery in the Interim. The conditions needed to stimulate adequate private land development in urban areas depend on further evolution of change in the macro-economic and financial environment, as well as the reforms noted above. But, as suggested by rapidly escalating land prices, the constraints on urban land in Jamaica cannot wait until all of the conditions for enhanced private responsibility are in place. A solution that could work well in the interim is an active public sector program that would focus on land delivery per se (rather than house construction).

This approach is fully consistent with Jamaica's 1987 Shelter Strategy noted earlier. The design of the Strategy was based on considerable research about the real economics of shelter development and the role of the informal sector that

process. It holds that the Ministry of Construction (Housing) (MOC(H)) should address the needs of low-income groups by providing serviced sites only—the households themselves will be responsible for developing the shelter.

The Ministry initiated the approach with a project to accommodate more than 3,000 households on government-owned vacant land in the Norwood area of Montego Bay. It has designed an orderly site plan that will provide 3,600 square feet lots on average in a staged manner. The first stage entails only the clearing of roads, the pegging out of lots, and the provision of a few temporary standpipes for water. Households will be allowed to occupy the parcels immediately thereafter, probably making a small down-payment to demonstrate their serious interest in settlement. MOC(H) will arrange for permanent infrastructure and conveyance of title at a later time. A new payment agreement would be entered into then, the original down payment being credited against the family's long-term obligation.

In discussing the benefits of this plan, the Ministry emphasizes that if it is not done, the land will be settled anyway. Squatting (with inefficient use of the land, no services, and no cost recovery) will be the inevitable result, and it will happen soon. Another benefit is that this approach requires much less government staff time per household served than one involving house construction as well; i.e., existing MOC(H) capacity should be able to provide for a larger number of families each year. Given the existence of substantial government land holdings in other parts of the island, MOC(H) is pursuing the development of a number of other sites in this manner (normally at a smaller scale).

In potentially significant variations, MOC(H) plans to involve private developers in this process. In one model, private firms will develop the land on a turnkey basis for the Ministry. In another (being supported by USAID), private firms will assume more complete responsibility. They will acquire land from MOC(H) and develop it in accord with their own plans, but with the proviso that they will set aside a significant portion for serviced sites affordable to below-median income households.

Addressing Land Use Conflicts as Cities Expand. Better planning for urban fringe development should itself minimize potential land use conflicts. Regulatory changes that promote more compact urban development will also work toward this end. Nonetheless, given the magnitudes of expected urban land needs, it is certain that some conflicts will arise. In particular, some land now in agricultural use will have to give way to urban activities.

In some quarters there has been strong sentiment against public policy that accepts the conversion of *any* agricultural land to urban use. In reality, however, it will be impossible to prevent all such conversions—they will happen in an unplanned manner unless the possibility is accepted and dealt with as a part of the the planning process. Potential losses to the island's agricultural base will be minimized if analysis of the economic payoffs of alternative patterns is conducted; i.e., identifying and comparing the contributions that a particular parcel would make to the national economy under various prospective uses.

In this regard, it is important to keep in mind that urban land offers a much greater economic contribution than it is often given credit for. It is difficult to quantify this precisely, but even a rough comparison makes the point. In 1982, Jamaica's agricultural sector had a work force of 260,500 and contributed a total of J\$396 million in value added to the economy. About 1.26 million acres were in use as developed crop or pasture land. This implies averages of 0.21 workers per acre and J\$315 in value added per acre. The economy's "urban sectors" (all others except mining) then employed 731,400 workers and yielded J\$5.133 billion in value added. Land use studies show that Kingston-St. Andrew had a total of 25,060 acres of land developed for urban use in 1982. Assuming urban densities elsewhere averaged half that in Kingston-St. Andrew, then Jamaica had a total of 75,500 acres of urban land. This implies per acre averages of 9.7 workers and J\$68,000 in value added. The latter figure is more than 200 times the average value added per acre of agricultural land. Of course, some types of agriculture have a much higher yield per acre than the average, and that should be factored into planning decisions. The point is that case by case economic analysis is a much better approach than either the wholesale promotion or prevention of urban incursion in agricultural areas.

Approaches to Infrastructure Development

As noted earlier, national financial constraints will not permit substantial increases in Jamaica's urban infrastructure in the near term. Therefore, to address growing urban requirements, the only course of action at present is to enhance program *efficiency*. There are a number of means of accomplishing this, for example: adopting less costly standards and technologies (i.e., eliminating unnecessary "safety factors" in design when there is no real need for them); improving the maintenance of existing networks; finding ways to reduce the import content of the total program; enhancing cost recovery in a manner that provides incentives for more efficient use of services; expanding the use of private firms in the delivery process. Jamaican infrastructure providers are already working along many of these lines, but the importance of the urbanization problems reviewed here suggests that more emphasis on them is warranted.

It will also be important for Jamaica to put more emphasis on cost-benefit analysis in deciding which infrastructure projects to pursue. In the past, projects have been scheduled that do not have high economic, social, or environmental payoffs. Some of these, for example, were designed to provide infrastructure to quite small towns in the hopes of stimulating their development. International research over the past decade demonstrates, however, that infrastructure alone is not sufficient to stimulate the growth of a town (or region) if there is no independent economic basis for that growth. Such investments are hard to justify in today's resource scarce environment. The viewpoint is shifting now to giving priority to infrastructure where it is clear the lack of it is already constraining economic growth.

In Jamaica, this leads to giving very high priority to locations where the most rapid growth is now taking place. First among these, are the major tourist centers: Montego Bay, Negril, and Ocho Rios. The Government is developing a priority infrastructure package for these areas at present (with support from USAID and the

Government of Japan). The package includes road rehabilitation, water provision, and improvements in sewerage treatment (e.g., the disastrous condition of the Montego Bay sewage plant will be addressed in this package). This approach is likely to have high payoff in economic development terms, but it will also deal with the most serious urban environmental problems on the island: the deplorable water-sanitation conditions in Montego Bay and Negril.

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